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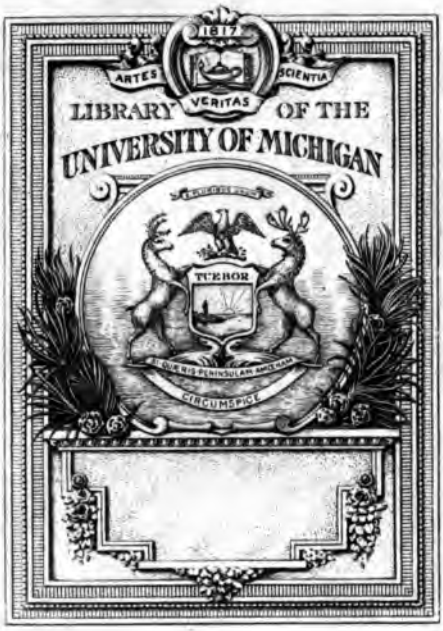
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MAN OR MACHINE—WHICH?

MAN OR MACHINE—WHICH?

OR

AN INTERPRETATION OF IDEALS AT WORK IN INDUSTRY

BY

AL PRIDDY

Frederick K. Brown

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To E. C.
IN FRIENDSHIP

PREFACE

WE ARE sure that War will be downed by our idealism. But what quality or fibre has our optimism when faced towards our mills and our industrial machines? We have more machines than guns, more laboring men than soldiers. We know that every calendar day our mill sites are turned over to strifes as bitter as war; into battle-grounds whereon deadly hates between man and man are as deep-nourished in gall as is any hatred between Invader and Invaded. What do we see ahead, then, for Man and The Machine?

We have a night-mare at our bed's head! It is a horrible polished skeleton of a machine, with cog-teeth, lever

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arms, belt neck, death trap body and intestines of whirling knives and hammers. We shudder before it and hide our heads. The night wears on and we see this night-mare reach for pigmy-man, draw him to it and throw him to the floor lacerated by the knives, stunned by the hammers. Then the night-mare folds its arms in triumph, sneers at its victim, and we leap from our bed to dash cold water over our burning eyes—eager to wash out what we have seen!

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I

WHAT IS INCLUDED IN THE THOUGHT THAT MAN IS TO BE MASTERED BY THE MACHINE

the "hired man" has become an expert mechanician. The farmer, himself, has become the manager of a "works." At last he can shake hands with the manager of the "shoddy mill" down by the "brook" saying, "I, too, have become an operator of machinery."

Now that the conservative farmer has adopted machinery, the last enemy of machinery has capitulated and our trite words, "This is a machine age" are filled to the brim with truth.

From the chattering alarm clock which interrupts our dreams in the morning to the automobile which hums us home from the party at midnight the gap in our day is crowded with our helpers, machines. Even the soup on which we lavish such praise to our hostess, was possibly concocted in some modern food mill. The time has come when even the Bedouin gypsy has

to tremble as the shadow of an aeroplane floats over his inviolable sands.

In fact, our dependence upon machinery is well nigh complete. It is the back which bears the heavy loads, the arm which lifts the pack from the ground, the firm feet which brace up the weight of our modern structures. Through it flows a vitality, the electric fluid, the vapor gas, which does more work than the romantic exploits of fabled giants ever accomplished—without diminishing one fraction of its power. If our machines stop, then the people perish.

This near-absolute dependence upon machinery wins from us a respect which is the nearest synonym for worship. This steel finger which lifts, without effort, a load that would prostrate a quintet of Hercules, dominates our enthusiasm. This steel hand which

pushes a load that would make a horde of Pyramid builders stagger, produces in us a reverent respect. While, unlike the jungle black-man we do not name that a "god" on which our fullest dependence falls, we unconsciously maintain towards machinery that lofty expression of homage which any "god" would count worthy.

Very often, too, our respect for the machine carries us close to the door of fear. As the cave-man's respect for the sighing wind deepened into fear when that wind turned into a hurricane that uprooted century old oaks, so our respect for machinery turns to an unwillful dread when it passes from the performance of a simple task to the accomplishment of something which we have always thought the unique function of a divinely ordained creation. When the machine develops into

an adding, subtracting, multiplying, writing, running, flying, singing, talking, measuring, thing—apes our prize functions—it grows into a Gorgon! We are startled when these smith-made castings which our hands have arranged in shape with bolts and nuts, begin to do our tasks, quicker, more perfectly, cheaper and with less effort than we.

This fear begets in us a creed on which we stand facing a future that is dark and forbidding. It is a pessimism which broods over the intrusion of machinery on our most sacred rights. The creed, finding outlet in words, says, "The more that machinery is used, the less man will be used. The growing intricacy of machine parts means a consequent diminution in man's skill. Machinery will more and more rob man of his initiative. Ma-

chinery will take away the dignity from labor. Henceforth we cannot appeal to man's honorable respect for 'the divinity of his task', because he will not be able to use his brain or the skill of his hands. The machine will become both brains and skill. Finally, the machine will be man and man will become the machine!"

This is a creed which is generally received. The man who invents the machine is heard crying it aloud in the street. The manufacturer who buys the machine proclaims that such a day is not far off and so thoroughly enters into this laudation of the machine as to forget, at times, the interests of the man he employs to direct it. If the slighted workman asks, "What of my rights, sir?" The employer often replies, "Your rights, you have none. The machine has already taken them

from you." The workman, at the machine, lives in deadly fear of the instrument he uses; gripped by the same loathing that takes hold of a prisoner who must help erect his own gallows. All through the industry of the world we find him opposing the introduction of it, misusing it, trying to defer the day when it shall triumph over him and leave him without rights! The humanitarian cannot find optimism in this thought. He sees, not far distant, the complete slavery of man, not with a human whip-wielder over him, but a heartless, un-moral, unethical machine! The social prophet puts on a black robe when he contemplates the industrial future and speaks in our public places quite rhetorically of "the social turmoil," "the future confusion," "the discarded, unhonored workingman," "The heartless manufacturer" all based

on the premise that man is to be completely mastered by the machine.

Such a philosophy in the hearts of inventors, employers, workingmen, humanitarians and prophets can only prove a menace to the future.

Religious faith would be foreshortened by it. Religion depends for its growth and reputation on the absolute freedom of men from any servitude whatever. In the days of ignorance, religion is at a low ebb. In the days of superstition, religion is but a dull, blue spark. Among slaves religious faith is but half expressed. But this creed which says that as inventions increase, as machinery develops, man is to be more and more inefficient, means simply that man's brain is to have less exercise, man's skill is to be less and less called for, and that the future will be under bondage to a

machine. That is the reason why workingmen oppose the introduction of the machine, why the social prophet is disturbed. Both tremble at an imminent, abject slavery of mind to machine, of skill to machine. The humanitarian holds in his eye the vision of an exploited manhood! This seems a poor soil on which to expect the red passion flower of faith in God to sprout. It is feared that men will then term God a mechanical deity, Himself enslaved, helpless, powerless.

This creed would likewise bring moral wreckage amongst us. For as their skill, their initiative seem less and less in demand, workingmen see slip away their bargaining power over the employer. If a man refuses to stand at a machine, the employer may call on a woman or a child to take his place. There is an end to the matter. When

he loses this bargaining power the workingman often lets go his moral power. Not only machinery but the employer, the owner of the machine, the stockholders and the managers, become the targets of his illegal conspiracies, the objects of his anarchistic philosophy. The multitudes of men who are enlisted under anti-social, anti-moral banners are not to be easily numbered. They are covering the earth with their doctrine; are causing great and bloody riotings at factory gates. Stop that man who carries the red flag, wait until his inflamed face is composed and ask him the reason of all this riot and un-moral treatment of orderly laws, this disrespect for the established order, and he will reply, "Mainly because the machine is mastering us and will master us soon if we don't fight!"

Thus, in time, the irreligion and the immorality nourished by this industrial pessimism filter through our social order. This thought that man is to be finally mastered by the machine touches us at every turn. The workingmen grow reckless in contemplation of such a fate, and feel more keenly the present restriction which machinery inflicts on their social liberty. They attack the mills, in spite of military guards. They intimidate and assault, they often kill. "If we are so shorn of our skill now," they argue, "what will become of us when through the cunning of machinery one man will perform the work of fifty, when a little child will be able to accomplish more than is done now by half a dozen, skilled men?"

Now this is not hypothetical or prophetical: this irreligion and unsocial mind, but is deep seated in our

present world industry. The manufacturer, the humanitarian and all society have innumerable yearly reminders of this: reminders which leave deep and unhealing scars on the social organism. It is not a pleasant view the toiler has from the summit of his mountain, for far in the glow of the sun-rise he sees the black shadow of the machine. He cowers back, for he sees it is coming with the speed of the sun to capture him, to become his task-master; his dominant lord!

II

WHAT TAKES PLACE IN THE WORKMAN WHEN THE MACHINE COMES

II

WHAT TAKES PLACE IN THE WORKMAN WHEN THE MACHINE COMES

THE workingman has been taught that his chief asset is skill. It has been his stocks, his bonds, the pride of his life. Poor as to purse and impoverished in his household: his cup-board bare, his last penny spent on a bread crust, he is not humbled, no, he merely stretches out his ten fingers and two calloused palms, exactly as a proud king extends his diamond-tipped sceptre, to show you that which upholds him in his birthright. "My skill is my portion given to the world," he says. "I shall not want. See, I am without a penny.

I touch this bar of steel, and it becomes a scissors blade. *My skill* did it. I take this stick of oak and it becomes a chair rung! *My skill* is the grandest magic on earth, the common magic of every day. By it I live and because of it I hold my head royal high."

This skill has given him a large place in the economic order. It has been a coin of the highest denomination, having purchased for him respect from the rich man who employed him, having made Solons grant him protective laws, having put him in a dictatorial place where he could say to this man, "You cannot join my craft," and to that other, "You may join my craft!" With it he has extracted higher wages from unwilling employers' pockets, through it he has formed himself into a distinct, economic class.

But the machine now attacks and

displaces this skill. The cunning of trained fingers is transferred to cranks, cogs and belts. The trade secrets are objectified in mechanical form; able to mix the product, compound the chemicals, or make the notch at the right place.

More than this, the skill of the machine is fixed, final. It makes a notch, chips the steel, files the bolt or spins the yarn without a slip, without an error, without an imperfect stroke. The workman's skill fluctuated every day, differed in degree every working hour. But the machine is unerring—like Fate. When the mind of the bookkeeper is over tired and unreliable, the adding machine will make its intricate calculations far into the night, ever saying at the end, "Use me, *I* can be trusted. *I* am never tired!"

Yet again, the skill of the machine is a hundred, a thousand times more productive than the skill of the man, though demanding from him less effort. It produces, with undeviating precision, that many times more yards of cloth or yarn, that many times more chair rungs and nails. The machine becomes a skilled man many times multiplied, many times more skilled. The transfer seems more than dramatically complete. The laborer looks at his hands and mutters, "What have you left—now?"

Besides this loss of skill, the workman loses, in the grind of the machine *his sense of the value of his work.* Next to his pride of skill the workman has always been proud to be the connoisseur: stand back near the light with his product on his upraised hand showing to all passers-by what he has done.

Perhaps it was a red, morocco slipper for a dancer, or a pearl button to go on the cloak of a little child, or maybe it was a horse-shoe to go on the mayor's carriage horse. On a day a party of visitors would come to the little shop and the owner would pick up a hand-forged hammer and say, "See what John made!" But, in our modern industry, no one man ever completes a task. Each task is subdivided into twenty, forty, a hundred or more portions, and a workingman is given just one to work on, day by day, year by year; for a working generation. In this corner of a vast room the toe of a shoe is cut out with a mechanical die. In the basement of the factory the sole is stamped by another machine. There is a man to do nothing but bore lace holes, another to do nothing but run the machine that pinches rivets in the

lace holes. One man sews on the toe, another sews on the sole, another polishes the sole, another blacks the heels. No one of them is going to show the little part he has done and boast of it. He rather feels ashamed of his little creation. He yawns. That is all, or wonders what the baby, at home, is trying to say at that moment.

After the time has come when the workman can find no distinct esthetic pleasure in his work, his loyalty to his employer suffers a shock. Loyalty no longer has right nourishment. For consider, the toe of a shoe, a lace-hole or a cross-stitch are the weak things which hold the employee to his master's interests. Having merely a toe, a heel, or a cross-stitch interest in the whole pair of shoes, it becomes no exciting matter to the workman what the shoes sell for, who wears them or

whether they last long. But had he made the whole shoe, the workman would have been interested in those several directions. As it is, however, week in and out, year added to year, the toe maker or the sole cutter very probably never sees the completed shoe he has helped make. He has no immediate consciousness of having any reward in the total, artistic outcome. So it occurs, then, that the workman gives hardly a thought, save as it bears immediately on his wage or personal merit, to the important adventures of the shoe in the market. He is generally indifferent to the prestige of the shoe, and when he sees it advertized on the garden walls as "a marvelous product of skill," he has no responding glow or sense of pleasure towards that poster, for deep lodged in him that economic truth pops up,

"Yes, it is the machine that did it. I am only one of a hundred who helped the machine to make that shoe. I merely run the machine that automatically stamped the number on the inside!" If the shoe has no reputation in the markets, if the shoe falls to pieces after going through the first puddle, if the price be above its worth, if it gains a reputation among discriminators for its faults, the mass of employees in the shop are not concerned. They care little about that. I have even known some employees to grin at their employer's predicament: gloating in the fact that the man upon whom they rely for wages comes to grief! It is also possible that not seven out of eight employees even buy or wear the shoes in which they should have a productive interest! For the startling fact crops out, in our modern industry, that more

and more the machine weakens the bonds of loyalty between the man employed and the employer.

Then when this indifference or disloyalty is full grown, the employer has full on him acute, and formidable labor diseases. The man who should stand at his shoulder faces him, instead, with a hostile poise. The mill full of people over whom he holds power, upon whom he depends for his success and who, in turn, depend upon his initiative and capital for their bread and butter, is turned into an armed camp of plotting enemies, who, while they work, grumble, and who, while they receive their wages, scheme for the overthrow of the entire concern! His mills, instead of being shelters for his brothers and sisters, are nests of scratching eagles—ready to rend and claw!

It is further given out that the

machine robs man of his industrial initiative: that the complicated and specialized machine decreases his mental alertness. In addition to his skill and his appreciation of his product, the workman has ever prized the appeal his labor has made to his individual intelligence. His work has brought thinking power with it. His day's task has included the excitement of *invention and adventure.* In the heat and burden of the week has come that thrilling moment when his mind has discovered the fact that *a variation in method means a simplification of his task.* Or, in the monotonous on-going of his labor, he has suddenly realized that by sheer brain power he has accomplished a third more work than his neighbor. He has counted such results compliments to his initiative, to his thinking power. They have

brought a reward three times more satisfying than a mere increase in wage, for in his eyes they have been substantial *testimonies* to the *freedom of his mind:* something which every reasonable person puts higher than any king's ransom. But the coming of the machine deadens the workman's inclination towards inventive adventure. When clerks wrote with quills and pens, the prized effort of the day was centered often in producing a chirography both artistic and notable. Now the typist at the machine has little else to do than copy her notes and speculate about the next night's dance. The machine, meanwhile recording every letter, flawless in spacing, form and distinctness. The typist's mind grows less and less interested in her task, as a medium for inventive skill, because the perfect action of the

machine seems to her the final word in her art. So the multitude of men and women stand before the cunning machinery of industry, in the pose of helplessness before a mechanical finality. They cannot help feeling that in so far as their special task is involved, the machine has said the last word. The challenge dies out of their work. The brain that has ever been on the quiver of adventurous expectancy, relaxes its tension, and the workman moodily or indifferently lets his machine do its perfect work while his undisciplined, unchallenged thoughts wander freely over external, social or domestic concerns. It may give an indolent, unambitious, selfish type of employee a certain amount of satisfaction to know that the machine frees his mind of initiative, but to the considerate workman it is a day of tragedy

when his brainpower receives no challenge from his work, and that day has dawned in the minds of millions of men who throng our industries.

So then, when this machine-robber, without heart or conscience makes of little repute the workman's most shining glory—skill, steals rudely from him the esthetic pleasure in his product and leaves him mentally crippled before his work, how little force has that honored appeal, "The dignity of labor!" Talk as we will, in this machine-ridden time, the "dignity of labor" is but a skeleton of its once former, robust self. Take away the king's throne, the courtier's carpet, the royal prerogative, and then speak about "The Divine Right!" All that "dignity of labor" can mean in these days is simply that it is more dignified for a man to earn a wage than it is to be a door-way loafer. The work-

ingman's throne—skill, has gone. His prerogative—skill, has been taken away. The items that have formerly given dignity to labor have been largely displaced, so far as we have adventured, by the machine, and the future holds out no other hope than this, that machines shall more and more increase. There is little "dignity" in a task that a man does which may be equally well done by his fourteen year old boy or girl. There is little dignity in a task which less and less depends upon independent knowledge. To make that appeal only resurrects the ghost of a former workman who is seen in the fullest enjoyment of his old birthright: exchanging his skill in the offices of deferential employers, holding up for the world to applaud the product of his intelligence, clothing his task with new

worth to himself and the world through the adventurous findings of his alert mind!

III

WHAT TAKES PLACE IN THE EMPLOYER WHEN THE MACHINE COMES

III

WHAT TAKES PLACE IN THE EMPLOYER WHEN THE MACHINE COMES

WORLD-CONQUERERS seldom have heart strings which vibrate sensitively. Here is the world-conquering machine with no heart strings at all! Theology, ethics, morals: these are investments of flesh and bone, epic flashings of the divine spirit. But back of the ribs of the steel machine, giving it pulsation, is economic spirit, merely, the electric or steam spirit which yield un-moral values. The industrial machine lets weeping widows, broken-spirited men and heart-weary orphans stand before it while its wheels hum with indifferent

laughter. It holds no moral, human relation towards our generation. It is nothing to it whether a child is born or a man dies or whether this kindgom becomes a republic or that republic a kingdom. It has no single thought outside that of its ordained end: TO FLATTEN ITS GREEDY PALM ON EVERY TASK NOW DONE BY MAN.

Is it a wonder then that the machine should in time re-act on its owner? Servants generally do re-act on their masters. It has sometimes been observed that a footman has taught manners to an Earl. Any treasure with dividend possibilities in it, whether of esthetic gratification or economic returns, has streaked across it that red-lettered indictment: "Where your treasure is, there will your heart be also!" The economic possibilities of

the machine are so vast, so capable of increasing enlargement, that there is no treasure common to man which half so powerfully endangers human rights. Over the sunken hulk of a Spanish galleon a handful of ear-ringed scavengers have slashed one another with dirk and sword. Over a few square miles of province contending nations have hacked with pike or Mauser bullet. In search of a bag of opals and a box of flashing rubies caravans have embroidered desert sands with their bones, and even for a pan or two of nuggets hordes of men have left the manners and morals of civilization back of them, with barriers of snowy passes and death-threatening storms before them! All this for a mere thimble dip in the world's treasure bag! But once get the economic world in perspective and see epitomized before you what men

have done to get the treasures of the machine, and, by comparison, the ear-ringed pirates, fights, colonization strifes, venturesome sacrifices of fanatic men or the costly gold-getting of prospectors are no more than the amateurish rehearsals of a one act play. For industrial machinery has tortured human bodies, crazed men's minds, crippled growing children, turned brides of a day into widows, turned righteous men into fanatical enemies of society, spoiled eyes, sapped up the earning strength of men and women, rendered bodies unfit for the nourishment of children, left through the years innumerable graves filled with those who have been exploited at the machine: all this that the treasure of the machine might be secured! Every day when the sun is above us and all is still and peaceful on our

streets, wherever there are mills or industrial machines, a state of war exists, in which the generals and captains are owners and managers, directing men and women in the battle with machinery. As many as thirty thousand in one year have dropped dead before the machine in the United States alone, while annually hundreds of thousands fall wounded in mind or body, throughout the earth. How much of this terrible tragedy might have been averted by unselfish and humane employers only God's statistician is able to compute, but we know this, that a goodly portion of it has been due to the serpent's fascination the treasure possibilities of the machine have exercised over incautious owners!

The machine has tended to deflect the eyes of the employer from an economic interest in his workman. That

fine adjustment of man to man, ever the finest flowering of brotherhood and which was quite characteristic in the crafts when man had his skill as power, has been displaced more and more by the machine which has come between the owner and the employee, pushing both men apart a pace each year, until they are removed too far for a handclasp. The machine has monopolized the economic thought of the employer.

So that now it is a rare thing for an industrial employer to feel intensely the importance of the personal worth of an employee. It is a simple matter to explain, for the master unconsciously depends more on the machine than on the operator. Men and women may come and men and women may go, but the machine goes on forever, forever: dependable, reliable! The value of the

personal service of the employee has decreased more and more, until it is one of the common sights to see an almost never-stopping line of help passing through our industries from door to door. The days of a lifetime's service are past, now, in our large industry. The operatives with long service to their credit are exceptional. The simplification of tasks so that a child, untutored, may take them from the hands of a man, work havoc with the value of personal service. Quite recently I stood next to an old man who had worked at his machine for twenty-three years. The company was to throw out his machine the following week. But no one representing the owners of that machine, came near that man and spoke appreciatively of his service. There was no pension for him, no new task to keep him from a

penniless declension. He was turned off without a "Thank you!" or a "regret." It is even a rare matter, in our industry, to find the employer urging even his highly paid, highly skilled help to stay at the task. The machine has tended to blunt or entirely destroy that sense of personal oversight which made master and man understand and be loyal to one another in craft days.

Thus thrust out of sympathetic touch with his operator, not being generally bound to him by the loyalty of long service, and finally having little concern over the details of his employee's life, it is an easy matter for the employer to pay a low wage. For consider, here is his machine working on year by year for its maintenance. That fact alone tends to blunt an employer's sense of human values of service. It becomes

a delicate matter to know just how much to pay an unskilled, ignorant worker! And so we have had the ugly sight before us, throughout the years, of workmen, unskilled and unfitted for the arts and practices of war, embattled at mill gates, fighting for an increased wage. It is to the credit of our times that wages are generally more than enough for a bare existence, but we cannot rub out the historic truth that the wage would never have been so had it not, in a multitude of instances, been wrested from unwilling employers by the employment and terrors of unsocial and un-human industrial revolutions; many of which have been first cousins to actual civil war.

Unchecked by restraining laws imposed by state or by workmen's guilds, the owner of machinery is easily led to be a glutton of overwork. His

machine never tires. The thought of an "idle machine" is almost a contradiction of terms. It will hum on its merry way when men yawn or when men sleep. Iron is tireless. Besides, the thought that when the machine is running wealth is increasing, is a most conclusive one. Bone and flesh must measure up to the demands of the machine. So the mills are opened at night, and only reluctantly stopped on Sundays. Men and women, even children, are asked to double their time at the machine. Some are even asked to give up their day of rest. Finally flesh, not so firm as steel, withers, strength leaves, the body crumples. Another workman is instantly put at the same machine. Thus the generations are weakened, exploited, while the owner of the machine stays in his counting house,

fretting over an increased demand made necessary by the widening of his market brought about by the doubling of his machines' output.

Finally the machine re-acts upon the employer's social thought. The employment and rule of a group of people is a social responsibility. While a thousand people are under rule in a man's mills, for ten or eight hours a day, there is something more than providing a machine for them necessary. There is a social gap to be filled. In the days of the crafts the worker had a close relation to his employer, often sleeping in his house, eating at his table. Even in slavery, the black man had the social supervision of his master or overseer. But the shifting, itinerant, temporary employee made possible by the growth of mills, and the massings of huge numbers in corporations, with

absent owners who, perhaps, hardly once a year see their workmen, removes the master farther and farther from the social interests of his employee. Health, housing, play, education: these become the concern of either humanitarians who do not own stocks, or of the state: Even when it is a critical matter of sanitation in a mill, where large groups of men and women are working together in poorly ventilated rooms, at dusty occupations, many of the owners of the mill have neither concern for the matter, or, most often, no real knowledge of it. They are concerned mainly with how much the loom or the lathe will turn off in the year. It becomes the work, then, of the state to interfere, which simply means, that we have to frame laws to keep employers human! Then if the state is lax, as it often is, society has

to offer up subscriptions and employ humanitarians to urge upon the employer the necessity of human concern for his workman.

There are but a few employers of large groups of labor who have run their machines for a number of years without losing one or both of these interests: the economic interest in an employee or the human interest in him as a man, as a human soul. In fact, these losses have become, proverbially, characteristic of the modern type of machine owner. Society has taken such a man for granted, even as one of the necessary evils following in the wake of a machine age. *Economically we may argue the justice of many things which are humanely wrong.* That is the insidious teaching the machine has injected into our midst. Competitively it may mean loss for an employer to have his

machinery idle fourteen hours a day. Economically, then, it seems right, to him, to have his men work at double shifts. Being human, has, in the eyes of many capitalists, the meaning of "being a poor business man." The machine, in terrible triumph, has trampled flat the social, human ideals of many an employer. It has gone on in its march, farther and farther from the human interests of the multitude of men and women and children who live by it.

IV

"THE PLAY IS NOT YET AT AN END, THERE ARE BUT THREE ACTS YET ACTED OF IT!"—MARCUS AURELIUS, MEDITATIONS

THIS drama of Man and Machinery, so far as it has unfolded its sombre roll to us, has, no doubt, prepared our minds for a disastrous dènouemènt: with the central character, man, sprawled ingloriously over the stage, mind battered, flesh mangled, and knife handles in gaping wounds! Indeed most of the world seems to have prepared itself for that end. When one strolls here and yon asking the simple question, "What of machinery in the future?" one sees

the gloom fixed on faces which have the power to laugh down other terrible menaces; soberer questions of destiny. One finds the workman busy at stoicism, learning, hungrily, how to gird his loins for that dark, inescapable day when machinery is to clap its cold steely hand to his shoulder and say to him, "My prisoner!" Here are certain philosophers in the throes of thought, giving birth to creeds with which to comfort man and guide him through the dark woods when Machinery shall be enthroned on the seat of deity! In fact, if there is any disturbing matter we keep from the house-tops and the proclamations of trumpets it is this, "Just wait and see what will occur when Machinery gets the world in its grasp!" A miserable whine is wafted this way and that on the morning wind: man's confession of his

inevitable unimportance to this world when machinery shall have taken size from him, dignity away from his task, skill out of his hand, intelligence out of his head!

But the suggestive result of any careful study of the modern industrial situation reveals the fact that no matter how complex machinery shall become; no matter how many of our tasks shall be taken in hand by it, no matter how huge mills shall become, the workingman will always be left to master the machine.

Indeed, one may almost venture a law that reads: *The more mechanical the world becomes, the better type of workman we should produce.*

For hidden in the chaos of industrial negatives, buried in the midst of industrial burdens, growing in un-social and un-idealistic practices, is a new word as leaven, that is one day to leaven the

whole lump and give us bread instead of stones. Already the principles are being placarded before men's eyes that an opportunity is theirs for mastering the machine. After the disheartening leadings of all that has come to us, in industrial practice, it is good and prophetical to know this. It braces us like a social tonic. To him who has eyes to see and ears to hear, is clearly evinced in industrial practice today the constructive mastery of the machine. In truth, "the play is not yet at an end, there are but three acts yet acted of it." The continuation of this drama of Machinery and Man should show, practically, the triumph of Man.

V

MAN'S PRACTICAL MASTERY OF THE MACHINE

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MAN'S PRACTICAL MASTERY OF THE MACHINE

THE most convincing way in which man may master the machine is when he invents a new and better one or improves an old one. This is the real triumph of mind over matter, of skill over machinery.

With all its arrogance among us, machinery is always final in itself; incapable of change, incapable of progression or retrogression. Till the clouds fade from the sky or the earth crack, a machine will remain the same from the day of its creation until the day of its last whirl—unless man says the word to change it. Once started on its mission, there is nothing

in the world can change the motion and purpose of a machine save man's mind. So then, whatever relation man might have toward a machine, this stands sure, he will ever be able to stand before it and say, "I am thy master. I can change thee, make thee better or worse. I made thee. I can unmake thee. If thou dost accomplish such mighty works, more honor to the mind which conceived thee!"

But only a special few of the world's workers have felt this relation towards the machine. The mass have been left with their ears dulled towards this note. The Inventor Class has arisen, almost as a distinct vocation, composed of those outside the mills, who have a whole day for leisure in which to dream changes, improvements in the machine. Less and less have the great mass of machine operatives been

brought face to face with this possible mastery of their machine. Improvements, changes, new ideas seem more and more to come from the outside, inventor class. The philosophical terror that the aggression of machinery has induced in the great mass of workers has dulled the sense of perception; this possible outlet for mastery is at a low ebb.

Now there is really but one man who should be best fitted to improve or re-invent the machine; that man is the one who works at it for his living. He knows the machine, or should know it. He understands its whims, its disadvantages more than any other man. He has given his life to it. He often feels that this or that part could be smoother in its running, that this and that part are unnecessary to the whole and hinder the production.

But in place of mental alertness in such a man, we more often find the operative before his machine in a sort of stupor and protest; with half closed eyes on the ceiling, raised above the humming steel. The Inventors who are at the same time operatives have been astoundingly small in number when compared with the number of keen, decisive brains that have stood for years before the machines!

On the other hand, many operatives have seen possible improvements in their machine, have understood, distinctly, that this or that might be simplified. Some have even chipped models out of wood and then put them aside as waste, disinterested. What is the matter?

The trouble is that it has not generally been the effort of the employer to make a distinct, practical appeal to or

use of this ability. Year by year he has left invention and improvement to engineers, to machinists, to the Inventor Class and has allowed the thousands of workers to pour through his gates to their work without once saying to them, "You are masters of your machines. If you get any ideas of improvement, bring them to me. I will help you with them!" The employer has held the creed that a workman is a workman; an inventor is an inventor: each will come to their proper level without forcing!

In this way many a man has failed to realize his practical mastery over the machine: has been caught in its grind and discouraged from all effort; a capitulation not without tragedy for any man who must undergo it. In this way, too, many and many an employer has lost the invention that

would have revolutionized his industry and augmented his fortunes: For his failure to include this suggestion in his list of practical and definite suggestions is two-edged, it cuts his employee and cuts him.

And now employers are realizing this as never before in all the history of industry. The suggestion to their employees that this practical mastery of the machine is always possible is included in the creed of "good business policy." It is not difficult to find this direct, official appeal to mind's mastery over the machine in force throughout industry. It takes two forms.

Rewards are offered to any operative who finds any practical method of improving the work they do. While sitting in the office of a corporation president where this system is in operation, word came that the day before a

workman had written on a slip of paper and put in "The Suggestion Box," at the end of his room, complete directions by which a simple process might be made simpler. There was nothing startling in the suggestion, yet the remedy meant a saving to the corporation of thousands of dollars a year. A considerable amount of cash was given the operative for his suggestion. But a more desirable prize came to that man, for I can imagine him sitting at his table that night in the flush of a great self-consciousness, saying to his wife, "Well, Ruth, the machine hasn't mastered me, anyway!" One may imagine him the next day on the scent for another chance to let his mind triumph over matter. Men, otherwise dull, inefficient, disloyal, indifferent, are aroused into their full birthright of manhood when this appeal is made,

when this incentive is given. The listless youth, who has heroically committed himself to a machine slavery suddenly gets on track of ideas. His eight or nine hours at the machine, instead of being island isolations, imprisonments, exiles, are turned into thought-provoking, idea-creating, exciting, pregnant hours. He is busy accepting the challenge of his machine, determined to change it if he can. The veteran, who since a youth has worked with machinery, suddenly is aroused by this appeal. He resurrects some of his dreams from the long days he has spent at his machine. He puts in his suggestions. They are accepted. He finds himself, at the end of his career, vindicating his mind. He has freed himself from the machine!

The second practical appeal that keen industrial leaders are making to

the minds of their workmen consists of substantial aid in securing for them their patents and marketing them. A notice like that, posted and clearly understood in an industry that employs ten thousand men means an awakening of conscious freedom not difficult to imagine. It sends every one of those ten thousand to his next day's task at the machine in the proud consciousness, that at least it is possible for him to invent a new machine: even possible for mind to make a more terrible machine than the one which has frightened him, in the past. The patent lawyer, the funds of the company, the services of a draughtsman, the verdict of a practical engineer: all these are ready to take his crude scrawl on paper or the indefinite idea in his mind and transform it into a new, fortune making tool. A possibility never

existing for the common man in yesterday's industry. Then if the idea is practicable, it is either marketed for him or purchased from him at a reasonable but high value.

Thus in the whirl of the machine, amidst the strange, disorderly confusions over wages, hours, rights, underneath the economic selfishness of directors, is crystallizing an industrial policy which, while it is economic, is to show the operative one clear way in which the mind of man will ever remain far, far above the machine in mastery of it. It is a policy that will grow as machinery increases, for this has been the history of machinery, that *the more there is, the more need arises for more to take care of what there is.* The invention of a new type of labor saving sprocket, for instance, is liable to require an entirely new

kind of lathe for its economic manufacture. This new kind of lathe, in turn, will require any number of new invented parts in turn.

But even with this business policy in active operation in all our factories, made clear to every operative, it does not guarantee to every one the mastery of the machine. The numbers will be small indeed who will concretely show, by definite improvements in the machine, that they are masters of it. There will remain that great mass of people with the old submission, with the former despair in possession of them. What of them, is this one item all that is included in the final mastery of the machine?

VI

MAN'S ECONOMIC MASTERY OF THE MACHINE

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MAN'S ECONOMIC MASTERY OF THE MACHINE

MAN'S mastery of the machine economically, is perhaps to be considered the most radical industrial and moral thought of this part of our century. We have seen that when the world has been under the disturbing thought of the machine, in its finer complications, lessening the demand for skill it has lost the real significance from the phrase: "The dignity of labor." Leading from this, we have traced the outcome on moral and social life: the strikes, the industrial battles, the lack of loyalty and brotherly understanding between man and man. It has ended by picturing the

workman in most abject, helpless and miserable mien.

But it is suddenly discovered by an industrial diagnosis that the machine has never been properly operated, even by the most skilled operators. It has been proved that "there is more science in the most 'unskilled' task than the man who performs it is capable of understanding." This dictum of Mr. Taylor, a practical experimenter, has been dramatically proved in many directions. In the task of the sand shoveler, or the iron lifter, for instance, it was proved that by scientifically undertaking such work, fifty selected men, properly drilled, scientifically rested, intelligently manoeuvered, could accomplish a third more than one hundred, ill selected and improperly managed men, in less time and under a larger salary. It is suddenly found

that contrary to theory, a machine to be economically operated leaves open man's chance for skill and does not rob him of it. I, for instance, am writing this on a typewriter. I use the most approved method of operation, the touch system. Apparently all I have to do is let this or that finger fall and the work is done as perfectly as a machine can do it. But a scientific teacher of "management" could come in and prove to me, very easily, that by paying more attention—scientific attention—to my task, I could get more wear out of my machine, be less tired at the end of a day, and do more writing than I now do: at a much smaller expense. He would show me how, by a larger understanding and patient study of my machine I could save one third the cost of ribbons a year and yet get more

use from them than I now do: how I should be more alert in such and such a posture and how often I should take a rest—and how long I should rest! The fact stares me in the face, as plain as the sun: I, college-trained, quick at the machine, have not sufficient skill or science to get what might be secured, at less money and less physical strain, from my typewriting! In order to be actually "efficient" at my machine, I should have to study, faithfully and thoroughly the ten exact, most forceful strokes each finger could make on the keys with the least effort. I should have to study scientifically just what sort of a chair I should use from which to get the maximum of ease. I should have to study lubrication, for the lubrication of typewriters for efficiency is a most vexatious matter, and my machine might be easily put

out of commission by improper methods of oiling, by the wrong sort of oil, by oiling the wrong part! I should have to make a study of pedestrianism; to know what formed an "efficient" rest from work, for it is very easy for me to take too long a rest and lose the proper inspiration for a renewal of work; I should be forced to study dietetics, for proper nourishment has such a strong relation to my work. I should have to study, thoroughly—oh, there is hardly an end to the roads of skill the scientific and economic use of a machine opens to an operator. Infinite numbers of wasted efforts, infinite amounts of wasted strength, infinite numbers of exhausted minds and bodies, infinite amounts of dollars wasted: these have followed in the train of improperly, unscientifically used machines. These have fallen to

us in the wake of the thought that has discouraged us, that skill has been displaced by the machine. What I have said of my use of the typewriter, is to be said, likewise, of the operators of the machines of all industry, no matter how simple they are. Each one has before him, in his machine, a challenge to his initiative and skill, of which he, himself, without scientific direction, is incapable of manifesting. This means, of course, that skill has not been given over entirely to the machine. By this sort of management of industrial machines it is claimed by competent engineers, and has been proved in instances by Mr. Taylor, that the manufacturer will increase his product from fifty to four hundred per cent without adding a new machine, and probably reducing the number of men in many instances, while it will mean

for the workman an increase in wages from fifty to one hundred per cent with less bodily weariness, shorter hours of work and less unemployment!

The workman trained to such a scientific thoroughness will never be in any danger of losing his initiative. It will always be challenged. The demands on the hand and the intelligence will be too accurate to become automatic. At least he will have this to his credit, that the machine can never realize its full capacity without demanding his science, his trained initiative.

A trained engineer, in criticism of this economic mastery of the machine, told me that he was afraid that the accurate manner in which the workman had to employ his skill, under fixed rules, would tend to make him like a machine. He quoted, for instance, the coal shoveler, saying, "I don't know

but that the coal shoveler gets more pleasure from doing his job as he pleases than by having it all mapped out for him!" To which the answer comes, that the *whole joy of work comes from its perfect accomplishment.* If under training we can perfectly accomplish our task, we have reached the highest possible joy of mind and heart in work. The surgeon trained to exact programs by some master, who does his work scientifically perfect is far from considering himself a machine. The engineer who made that criticism to me, himself is bound by the most exacting of sciences, mathematics, yet he is far from considering himself a machine when he works according to its rules. So the workman, trained scientifically in the understanding and use of his machine will rejoice in the thorough mastery of it. Instead of being the apprecia-

tion of *product*, it will be the appreciation of *perfect adjustment* to his task —a joy before unrealized.

This economic mastery of the machine, now at work in industry, means, too, the proper placing of men before their proper tasks. Our employers have been gulping into their mills whoever presented themselves—if they needed help. The result has been to put before machines men and women who were not only unfit to run them but who have been injured by their task. These could never be other than mastered by that machine. A woman has been allowed to weave who was more able to spin. A good spinner and efficient, has been allowed to weave at a poor wage. Society has lost much by such an arrangement. But the economic mastery of the machine, the highest efficiency of its operator

requires first of all that he or she shall be physically, mentally and socially fit for that task. If not, there is a weeding out, a rearrangement, a shift throughout the industry until each one is given the task at which he will not only be able to thoroughly master his machine, but in doing it, he will be increasing his wage, his physical powers, and consequently, his social status.

This is the business policy that has already commenced its work in our industry. It promises the reëstablishment of skill in our multitude of machine operators. It promises the restoration of initiative and appreciation. With this in our eye as the sure industrial ideal of the future, the machine age fails to be invested with the terrible ghosts and haunting shadows we first thought. Instead, we may

look definitely for a workman who "needs not to be ashamed" because at last his task has become dignified by becoming scientific. He will take his place among those honored workers, the scientists, as much a doer of a real task of skill as the ready-handed professor who adjusts a microscope.

VII

MAN'S MORAL MASTERY OF THE MACHINE

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MAN'S MORAL MASTERY OF THE MACHINE

BY FAR the larger promise for the machine age lies in the *character* that is to be demanded from the employee. *The machine age is to become more and more a moral age.* As we look for a greater spread of machinery we may also look for a better character in the operators of that machinery.

In the days of the crafts or in the days when skill was preëminent, when a man's hand made everything, there was little demand for moral character made by the employer. Only the stern preachers or the arm chair moralizers made the demand. Industry was

strongly tinctured in fact, with immorality; at least with indifferent character. In one steel mill that I visited, I was informed that the common practice of the bosses of the rolling mill and furnaces had been to have their separate gangs engage in semi-riots, on the axiom that pugilistic antagonism, departmental feuds, made the men loyal to the operators! Up to a late date, drinking intoxicants while at work has been almost as common as breathing air. The steel puddlers would not perform their shifts of labor unless allowed time for occasional visits to the nearby liquor shops where they soaked their bodies in alcohol. Railroad operatives have been, to the general mind, in the past, men of indifferent moral reputation. One will hear quoted reminiscence after reminiscence regarding the one time prevalence of low character in

industry. Employers readily go back to recent times when near-brutes dominated their industry. The cause is easy to explain. When there is no complex machine, and everything is dependent on skill and hand power, the workman could stop his work when he chose without any particular economic loss. If he were a hand weaver, he could descend from his seat and while he was absent in the tavern, or playing cards with his cronies, his loom would be silent. There was no power going to waste.

Then when crafts were gathered into mills and craftsmen were turned into operatives, the old habits were brought into the midst of machinery. The tradition was maintained until it seemed almost necessary for a mill hand to have a Falstaffian attitude toward morals and that tradition has so stoutly persevered that even today mill work and

low character are thought of synonymously. In fact I have been in more than one company of intelligent, professional people who have insisted that the synonym is only just!

But the fact is, machinery's success as an economic factor is mainly dependent upon the moral character of its operator. This is evident when one considers the tremendous amount of power there is back of one loom. There is the fire, the boiler, the engine, and scores of other machines before we reach the loom. Every one of the machines is adjusted to the speed of the loom. If the loom stop a minute, it is liable to throw a large part of the organization out of balance. At least, there is a minute of steam, of coal, of engine power lost. If that minute is multiplied by a hundred or a thousand, supposing that such a number of ma-

chines are stopped a minute a day, the economic loss to the employer during a year is considerable. The actual fact stands out, however, that the machines lose more than a minute of day through unnecessary stoppage. A waste, too, not due to defects in the machines but due to an inefficient operator. The girl has had poor diet, or the man is recovering from last night's spree, the young man suffers from dissolute habits, the boy's head is filled with the escapades his gang will originate that night, when the mill closes down. In such cases, and every employer knows what I mean and how common examples I have chosen, carelessness ensues at the machine. The employee is unable to keep up with the demands, the loom, the spinning frame or the lathe must stop. *Gather one day's loss of time, and waste of power, through defective, moral*

character; mass it from all corners of our world industry and the economic loss of time and production and wages through a month of strikes becomes incidental. It is generally admitted by employers of wise experience that in England, for instance, the huge hordes of unemployed could be considerably reduced if the employees would do less loafing at the machine. It is admitted that defective moral character in a workman inflicts on him not only a retributive justice of small wage, but imposes on our economic order a penalty which not only the employer must endure, but which reacts on the man's own class, giving fellow-workers less opportunity for work, and decreasing their wages! For the stoppage of machinery of course increases the cost of production, which, in turn, pushes up the price of, say, a

pair of shoes. Then, because the shoes are so dear, only a limited number of people will buy them, or if they buy them they will make them last longer than they would if they were cheaper. This demand being curtailed, there is less work for the shops. And so the world's idleness is increased! The logic of this is plainly evident throughout the industrial world. Employers of labor are battling for moral character in their employees, not because they are lay preachers, or that they have come, enthused, out from a religious revival, but because their experience shows on their ledgers a vast debit side opposite employees' inefficient moral character! On every hand one hears the patient pleadings of employers of labor in behalf of moral character. Practical pleas are made, nearly every day in some branch of industry. Pay rolls

are adjusted to the middle of the week or to the first work-day of the week in order that during Saturdays and Sundays the workmen will not have the means so handily for drunkenness or spend-thrift recreations. Hundreds, yes thousands of employers are found helping win community, moral campaigns, not from the standpoint of ethics, merely, but for the improvement in the personnel of their workmen; for economic ends!

Not only does the machine insist upon moral character in its operator on account of the power that is liable to be wasted, but also because of this fact, that *the more complicated machinery becomes, the more accurately adjusted to the performance of man's tasks, the greater premium it puts upon good character.* For an operator to stand before seven or ten, or, as many as thirty looms for

nine or ten hours a day, keeping the shuttles busy, keeping the beams snapping, confined to a narrow, slippery alley, with practically no chance to rest, save at odd moments or at noon, makes a demand on sureness of eye, steadiness of hand, swiftness of foot and denies the workman the gratification of any thirst or hunger that would in any degree take sureness from the eye, steadiness from the hand or speed from the foot! If that is common to this stage of the machine age, in its yet, imperfect development, what is to be the demand in the days ahead when the complications of machinery have become so bewildering as to daze one? This demand that the machine makes on the moral character is admirably illustrated in the cases of the horse driver, automobile chauffeur and the railroad engineer. Farmers pass my study window

nearly every day, intoxicated from their visit to the city, four miles distant. With nodding, lolling head, with hands in pockets, they will sit back, sleepily, while the horse, with common instinct, finds its way on the right side of the road, the reins dangling uselessly in the gnarled, limp hands of the driver! This type is common on all roads, on all streets. But the new horse—the machine horse—the automobile has demanded a new order of character in drivers. No matter how skilled, no chauffeur is taken unless he is "steady"—which is simply another word for "has good, moral character," which, when explained by the owner of the car, means that the man does not do anything that would make the eye incautious, the hands uncertain or the brain stupid. That is nothing more than asking that the chauffeur live a

wholesome, moral life! Then when we think of the railroad engineer, we instantly think of the workman at a machine who has probably realized to its highest point the need for moral character in the effective operation of his machine. The railroads not only insist that he shall be abstemious when on duty, but that in his home, on the street, his moral and mental efficiency shall be maintained. Within a month of this writing, one of the larger American railroads has sent out circulars to all its employees saying, in substance: "You are worth to us, at the present, one thousand dollars a year. That is your capitalization at present. Our plan is this. If during the next year you will increase your capitalization up to two thousand dollars, by mental, social and moral furnishing while off duty: by keeping away from the saloon

and being ready for duty, ready for the highest effective duty, through study and a good domestic life, we will increase your pay by five hundred dollars!"

Employers of labor, no matter how materialistic are their religious or ethical creeds, are actually driven by the machines into lay moral preaching! No statistical computation can be made as to the amount of temperance preaching—effective temperance preaching—which is done by the machine! Even narcotics, diets, philosophical affiliations are being put on trial by the machine. Pipes and cigarettes may unsteady the brain, dull the moral sense, poor food easily undermines the strength and skill of the workman, philosophical affiliations, like anarchism or the like very easily produces a workman who will deliberately work against the economic interests of the machine. We shall

probably never ordain this sort of a preacher to the ministry, but we must not lose sight of the fact that through his machine, he utters his voice very decisively in favor of all for which the pulpit prays and thunders!

Only God is reported to have said, in those first counsels with His own heart, "Let us make man in our image." The machine has not said it. There is no danger that it will ever say it. Machinery never ran machinery. Always and ever the intervention of man's skill and man's moral expressions are necessary. The more machines become machines, the more man becomes man. The mechanical exigencies demand that. The finer mechanical adjustments become, the more clear-headed, sure handed, quick thinking must the man who operates it be. Clowns, in Shakspere, dullards, the

Williams, are creatures of the soil, delvers in furrows. It is idle, wasted fancy to imagine that the growth of machinery will make men and women duller and duller, more and more immoral. Rather it is otherwise about. *We may safely*, in the light of the present ideals at work in our industry, *look in the future for the highest type of workman that the world has ever looked on.* This may be expected because the machine lays its chiefest emphasis on right character. Character is worth more to the world than technical skill. By character only shall the world do and be right. A skilled man may murder, may torture, may overturn the moral order and yet be skilled. A good charactered man will do none of those things. The coming workman is to be reinvested with skill and crowned with good moral character.

VIII

THE NEW EMPLOYER

VIII

THE NEW EMPLOYER

TO ADEQUATELY fulfill the economic requirements of this new industrial practice, a radical change will take place in the type of employer. It should be better phrased, "is taking place," for there is a new type of employer already amongst us. It has been noted that the machine, in the past, through an unscientific, uneconomic use of it, has crowded master and workman farther and farther apart; a tragedy which has resulted in grave and unsocial dangers to our civic and moral life. This unscientific, uneconomic attitude towards the machine has likewise, we have noted, taken away the employer from the economic

and social interests of his workman. This has brought about low wages, over work, untowards health and danger abuses. This policy has left the workman exploited in pocket and health, and has reduced the employer into an unseeing, anti-social materialist.

But in order to make an economic gain of from one hundred to four hundred per cent in his profits—the possibilities of a scientific management of his industry, the employer will not be an unseeing, anti-social materialist. He will have to align himself afresh to society and to his workman.

For notice what the unscientific use of the machine has made possible. It has given us the un-schooled, one-sided, intensely "practical" "hard-headed," "self-made" employer. The type that has dominated us for some

time has been the so called, "shrewd," "keen-eyed," "matter-of-fact" employer whose proudest boast has been either that he never went to college or "got" higher than the common school, or that he knew how to "make his men jump." Another adjective gives us the size of the type, it is the public's photograph without any re-touching: "He's a hard-headed man." Now "hard-headed" and "hard-hearted" are within a hand-clasp of being synonyms. With such a man dominating the field of industry, it has been "good business" for the employer to isolate himself from his employees' interests. When a foreman has had any manly complaint to make, he has gone into the private office of his "self-made" employer, the "shrewd handler of men" to find him with his head bent over his desk

apparently involved in a business trance from which it is impossible to waken until five minutes have elapsed, then thinking that he has cowed the workman with his importance, he grunts out, "Well, what's the matter with you now? Hurry!" We have become accustomed to such a type of arrogant, domineering "boss" to such a degree, that nearly every actor who apes the modern employer on the stage goes to the extreme in pomposity, sputtering impatience, and insolent attitude.

This "self-made," "uneducated," "trained-in-the-school-of-hard-knocks" captain of industry has been the story book hero for our poor, ambitious lads. On him they have feasted their hungry eyes in worshipful glory. On him they have looked as the embodiment of the finality of earthly success. This

"self-made, practical, shrewd, man" has controlled the industry of the world, under the old, unscientific, business basis. His motto has been, necessarily, because it was unscientific, "Keep every body at full speed as long as possible!" If he has employed children, he has worked them up to the full requirements of the day, fighting strenuously any legal cutting of the hours. If he has been an employer of shovelers, he has made the shovels fly just as many hours as the strongest shoveler could stand the strain.

Nevertheless, it has been this policy, and this same, "self-made" man who conducted his industry "along the lines of native shrewdness," rather than of economic science, who has literally wasted the labor of the world, who has left in his financial wake deep pits in the earth which trip up many

of us today. This policy has at times been brutal, inhuman, unethical, un-Christian. Nevertheless we have taken our part, sometimes, in lauding to the skies the "successes" of such self-made men. Quite recently I sat in an employer's office. He named over some of his colleagues and praised them, nobly and generously enough, for what they had accomplished. Their names are public property: some of them are "captains" of industry. None had ever been to college; had ever been trained in the higher schools at all. But I noted this, during my acquaintance with that employer who told me their histories, that most of the men he praised had left in the trail of their successes, innumerable labor wrongs: that while they had developed immense industries, they had likewise created social abuses and

labor troubles among their employees that formed part of the shame of our nation's social status! On the other hand, the man who sat before me had been liberally trained in the colleges, had studied in the foreign technical schools. He was a man filled with passionate idealism: exactly such a man whom the "self-made" man quotes when lecturing on "Success" to high schools, saying, "Too much theory (meaning a liberal college education) is bad for a practical business man. You must know one thing and know it well. That is the business of the day. That is best learned by doing. Nothing else should be wanted. That is why college men make such a poor success in competition with 'hard-headed' men!" etc. Yet this man has followed in the wake of his unschooled predecessors, and with his idealism, his

technical perfectness, his trained ethical, economic and psychological senses, his liberal culture has been busy fertilizing the waste places they had left, giving new dignity to his workmen, creating more humane conditions of labor, creating new standards of domestic life and pleasure, and yet, withal, *proving to be more of a distinct economic success than many of his predecessors!*

The scientific management of men and machinery, the highest efficient economy of work, the securing of the enormous rewards that science makes possible in hitherto unscientific industries, the insistence upon moral character: all these demand *an employer who must not only have a scientific technical training, but must also be scientifically trained in moral economy, psychological insight, sanitation, ethics and domestic culture!* Previous to this

the employer's vision has included only the machine. Under scientific and economic management, it has to include the machine, the workman, the working conditions, the social habits of his workman, his housing, his recreations! He will not be able to "guess" at a man's worth as workman, he will have to scientifically measure him by the rules of practical psychology. He will not merely set his man to work and let him go alone through the day. He will have to scientifically watch him, guide him, pay him a reasonable wage, inquire into his family life, surround him with proper light, sanitation and safety. He will have to teach him (actually and scientifically) moral economy. He will have to shield him from immoral or social exploitation. He will have to scientifically rest him for the highest

physical efficiency. He will have to furnish him with every conceivable precautionary safe-guard: all, merely, to create a workman who can secure, intelligently and efficiently, the highest possible treasure from his machine. One lapse into exploitation and the workman loses this high earning power. One scowl, one reduction in wage; *any un-brotherly act on the part of the employer will become "poor business policy."*

This type of employer is rapidly growing in the land. One may go out here and there and see this romantic leaven working. But he is more ahead than present; but he is surely ahead. Idealism is to pay dividends. There is to be a reversal of the present fact which reads, a thing economically may be right and yet humanely wrong. As machines increase and the highest

efficiency from those machines is sought by liberally trained, liberal-policied, far sighted men, there will tend to be nothing economically right that is humanely wrong. There will come a reversal, too, of the present prevailing axiom, that the success of the employer may mean the failure of the employee. It will balance: *the success of the employer means success of the employee.*

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